

**IN THE CLAIMS:**

1 1. (CURRENTLY AMENDED) A method for allowing a router to efficiently determine  
2 a ~~capability and time-to-live (TTL)~~ configuration of a peer router in a computer network,  
3 the method comprising the steps of:

4 automatically determining which ~~capability-TTL~~ mode of operation the peer  
5 router supports by sending an initial Border Gateway Protocol (BGP) message from the  
6 router to the peer router, the initial BGP message including a first predetermined value of  
7 the ~~capability~~ a TTL parameter;

8 if the router receives a positive acknowledgement of the initial BGP message  
9 from the peer router, determining that the peer router supports exchanges of messages  
10 using a new ~~capability-TTL~~ mode of operation; and

11 if the router receives a negative acknowledgement of the initial BGP message  
12 from the peer router, deciding that the peer router does not support the new ~~capability~~  
13 TTL mode of operation, and switching to an old ~~capability-TTL~~ mode of operation by  
14 resending the initial BGP message with a second predetermined value of the ~~capability~~  
15 TTL parameter.

1 2. (CURRENTLY AMENDED) The method of Claim 1 wherein the step of deciding  
2 comprises the step of, if the router does not receive a response at all within a predeter-  
3 mined time, deciding that the peer router does not support the new ~~capability-TTL~~ mode  
4 of operation.

1 3. (CANCELLED)

1 4. (CURRENTLY AMENDED) The method of Claim 31 wherein the new ~~capability~~  
2 TTL mode of operation is defined by BGP TTL Security Hack (BTSH).

1 5. (CURRENTLY AMENDED) The method of Claim 4 wherein the first predetermined  
2 value of the TTL parameter ~~capability~~ is 255.

1 6. (CURRENTLY AMENDED) The method of Claim 1 ~~3~~ wherein the second prede-  
2 termined value of the TTL parameter is 1.

1 7. (CURRENTLY AMENDED) The method of Claim 1 further comprising the steps of,  
2 in response to the router receiving a negative acknowledgement of the initial BGP mes-  
3 sage from the peer router:

4 upgrading the peer router to the new ~~capability-TTL~~ mode of operation;

5 rebooting the peer router, thereby destroying an existing session between the  
6 routers;

7 establishing a new session by sending messages with the first predetermined value  
8 of the ~~capability-TTL parameter~~; and

9 communicating between the routers using messages with the first predetermined  
10 value of the TTL parameter ~~capability~~.

1 8. (CURRENTLY AMENDED) A system adapted to allow a router to efficiently de-  
2 termine a ~~capability and time-to-live (TTL)~~ configuration of a peer router in a computer  
3 network, the system comprising:

4 a routing protocol process executing in the peer router and adapted to receive an  
5 initial routing protocol message sent by an initiating routing protocol process executing in  
6 the router, the initial routing protocol message including a predetermined value of the ~~ea-~~  
7 ~~capability a TTL parrameter~~, the routing protocol process returning one of (i) a positive ac-  
8 knowledgement of the initial routing protocol message to the router if the peer router  
9 supports exchanges of messages using a new ~~capability-TTL~~ mode of operation and (ii) a

10 negative acknowledgement of the initial routing protocol message if the peer router does  
11 not support the new ~~capability-TTL~~ mode of operation.

1 9. (CURRENTLY AMENDED) The system of Claim 8 wherein the routing protocol  
2 process executing in the peer router ~~is the-~~ implements Border Gateway Protocol version  
3 4 (BGP) routing protocol ~~and wherein the capability is a time-to-live (TTL) parameter.~~

1 10. (CURRENTLY AMENDED) The system of Claim 9 wherein the new ~~capability~~  
2 TTL mode of operation is defined by BGP TTL Security Hack (BTSH).

1 11. (CURRENTLY AMENDED) The system of Claim 10 wherein the predetermined  
2 value of the TTL parameter ~~capability~~ is 255.

1 12. (CURRENTLY AMENDED) Apparatus adapted to allow a router to efficiently de-  
2 termine a ~~capability and time-to-live (TTL)~~ configuration of a peer router in a computer  
3 network, the apparatus comprising:

4 means for sending an initial Border Gateway Protocol (BGP) message from the  
5 router to the peer router, the initial BGP message including a first predetermined value of  
6 the ~~capability a TTL parameter~~;

7 means for determining that the peer router supports exchanges of messages using  
8 a new ~~capability-TTL~~ mode of operation, if the router receives a positive acknowledge-  
9 ment of the initial BGP message from the peer router;

10 means for deciding that the peer router does not support the new ~~capability-TTL~~  
11 mode of operation, if the router receives a negative acknowledgement of the initial BGP  
12 message from the peer router, and for switching to an old ~~capability-TTL~~ mode of opera-  
13 tion by resending the initial BGP message with a second predetermined value of the ~~ea-~~  
14 ~~pability~~ TTL parameter.

1 13. (CURRENTLY AMENDED) The apparatus of Claim 12 wherein the means for decid-  
2 ing comprises;

3 ~~\_\_\_\_\_ if the router does not receive a response at all within a predetermined time, means~~  
4 ~~for deciding that the peer router does not support the new eapability-TTL mode of opera-~~  
5 ~~tion, if the router does not receive a response at all within a predetermined time.~~

1 14. (CURRENTLY AMENDED) The apparatus of Claim 12 wherein the initial message  
2 is ~~Border Gateway Protocol (BGP) routing protocol message, the capability is a time-to-~~  
3 ~~live (TTL) parameter and the new eapability-TTL mode of operation is defined by BGP~~  
4 ~~TTL Security Hack (BTSH).~~

1 15. (CURRENTLY AMENDED) The apparatus of Claim 12 further comprising, ~~in re-~~  
2 ~~sponse to the router receiving a negative acknowledgement of the initial message from~~  
3 ~~the peer router:~~

4 means for upgrading the peer router to the new eapability-TTL mode of operation;

5 means for destroying an existing session between the routers;

6 means for sending messages with the first predetermined value of the eapability  
7 TTL parameter; and

8 means for communicating between the routers using messages with the first pre-  
9 determined value of the eapability TTL parameter.

1 16. (CURRENTLY AMENDED) A computer readable medium containing executable  
2 program instructions for allowing a router to efficiently determine a time-to-live (TTL)  
3 ~~eapability and configuration of a peer router in a computer network, the executable pro-~~  
4 ~~gram instructions comprising program instructions for:~~

5 automatically determining which eapability-TTL mode of operation the peer  
6 router supports by sending an initial Border Gateway Protocol (BGP) message from the

7 router to the peer router, the initial BGP message including a first predetermined value of  
8 ~~the capability~~ a TTL parameter;

9 if the router receives a positive acknowledgement of the initial BGP message  
10 from the peer router, determining that the peer router supports exchanges of messages  
11 using a new ~~capability-TTL~~ mode of operation;

12 if the router receives a negative acknowledgement of the initial BGP message  
13 from the peer router, deciding that the peer router does not support the new ~~capability~~  
14 TTL mode of operation, and switching to an old ~~capability-TTL~~ mode of operation by  
15 resending the initial BGP message with a second predetermined value of the ~~capability~~  
16 TTL parameter.

1 17. (CURRENTLY AMENDED) The computer readable medium of Claim 16 wherein  
2 the program instruction for deciding comprises one or more program instructions for, if  
3 the router does not receive a response at all within a predetermined time, deciding that the  
4 peer router does not support the new ~~capability~~ TTL mode of operation.

1 18. (CANCELLED)

1 19. (CURRENTLY AMENDED) The computer readable medium of Claim ~~18~~ 16  
2 wherein the new ~~capability-TTL~~ mode of operation is defined by BGP TTL Security  
3 Hack (BTSH).

1 20. (CURRENTLY AMENDED) The computer readable medium of Claim 16 further  
2 comprising program instructions for, in response to the router receiving a negative ac-  
3 knowledgement of the initial BGP message from the peer router:

4 upgrading the peer router to the new ~~capability-TTL~~ mode of operation;

5 destroying an existing session between the routers;

6 sending messages with the first predetermined value of the ~~capability~~ TTL param-  
7 ter; and

8 communicating between the routers using messages with the first predetermined  
9 value of the ~~capability~~ TTL paramter.

1 21. (CURRENTLY AMENDED) A system adapted to allow a router to efficiently de-  
2 termine a ~~capability and time-to-live (TTL)~~ configuration of a peer router in a computer  
3 network, the system comprising:

4 an initiating routing protocol process executing in the router and adapted to send  
5 an initial routing protocol message to a routing protocol process executing in the peer  
6 router, the initial routing protocol message including a predetermined value of the ~~capa-~~  
7 ~~bility a TTL parameter~~, the initiating routing protocol process receiving one of (i) a posi-  
8 tive acknowledgement of the initial routing protocol message if the peer router supports  
9 exchanges of messages using a new ~~capability-TTL~~ mode of operation and (ii) a negative  
10 acknowledgement of the initial routing protocol message if the peer router does not sup-  
11 port the new ~~capability-TTL~~ mode of operation.

1 22. (CURRENTLY AMENDED) The system of Claim 21 wherein the initiating routing  
2 protocol process executing in the router ~~is the implements~~ Border Gateway Protocol ver-  
3 sion 4 (BGP) routing protocol ~~and wherein the capability is a time-to-live (TTL) param-~~  
4 ~~ter~~.

1 23. (CURRENTLY AMENDED) The system of Claim ~~22~~ 21 wherein the new TTL ea-  
2 ~~pability~~-mode of operation is defined by BGP TTL Security Hack (BTSH).

1 24. (CURRENTLY AMENDED) The system of Claim 23 wherein the predetermined  
2 value of the TTL parameter ~~capability~~ is 255.

1 25. (CURRENTLY AMENDED) A method comprising:  
2 sending an initial message to a peer router before a session is established with the  
3 peer router, the initial message including a first predetermined value of a ~~capability-time-~~  
4 ~~to-live (TTL) parameter~~ in a field that is outside of a routing protocol that makes use of  
5 the ~~capability TTL~~ parameter;  
6 if a positive acknowledgement of the initial message is received from the peer  
7 router, determining that the peer router supports exchanges of messages using a new ~~ea-~~  
8 ~~capability-TTL~~ mode of operation;  
9 if a negative acknowledgement of the initial message is received from the peer  
10 router, deciding that the peer router does not support the new ~~ea~~ ~~capability-TTL~~ mode of op-  
11 eration and switching to an old ~~ea~~ ~~capability-TTL~~ mode of operation by resending the initial  
12 message with a second predetermined value of the ~~ea~~ ~~capability TTL~~ parameter.

1 26. (CURRENTLY AMENDED) The method of Claim 25 wherein deciding further  
2 comprises, if a response is not received within a predetermined time, deciding that the  
3 peer router does not support the new ~~ea~~ ~~capability-TTL~~ mode of operation.

1 27. (CURRENTLY AMENDED) The method of Claim 25 wherein the initial message is  
2 a Border Gateway Protocol (BGP) routing protocol message ~~and wherein the capability is~~  
3 ~~a time-to-live (TTL) parameter.~~

1 28. (CURRENTLY AMENDED) The method of Claim ~~27~~ 25 wherein the new TTL  
2 mode of operation is a BGP TTL Security Hack (BTSH).

1 29. (CURRENTLY AMENDED) The method of Claim 25 further comprising, in re-  
2 sponse to receiving a negative acknowledgement of the initial message from the peer  
3 router:  
4 upgrading the peer router to the new ~~ea~~ ~~capability-TTL~~ mode of operation;

rebooting the peer router, thereby destroying an existing session between the routers;  
establishing a new session by sending messages with the first predetermined value of the ~~capability~~ TTL parameter; and  
communicating using messages with the first predetermined value of the ~~capability~~ TTL parameter.

30. (CURRENTLY AMENDED) An apparatus comprising:

a processor configured to execute an initiating routing protocol process, the initiating routing protocol process configured to send an initial routing protocol message to a routing protocol process of a peer router before a session is established with the peer router, the initial routing protocol message including a predetermined value of a time-to-live (TTL) parameter ~~capability~~ in a field that is outside of a routing protocol that makes use of the TTL parameter ~~capability~~, and wherein

the initiating routing protocol process is further configured to receive one of (i) a positive acknowledgement of the initial routing protocol message if the peer router supports exchanges of messages using a new ~~capability~~ TTL mode of operation and (ii) a negative acknowledgement of the initial routing protocol message if the peer router does not support the new ~~capability~~ TTL mode of operation, and in response to a negative acknowledgement of the initial routing protocol message, switch to an old ~~capability~~ TTL mode of operation and resend the initial message with another predetermined value of the ~~capability~~ TTL parameter.

31. (CURRENTLY AMENDED) The apparatus of Claim 30 wherein the initiating routing protocol process is further configured to, if a response is not received within a predetermined time, decide that the peer router does not support the new ~~capability~~ TTL mode of operation.



1 32. (CURRENTLY AMENDED) The apparatus of Claim 30 wherein the initiating rout-  
2 ing protocol process is a Border Gateway Protocol version 4 (BGP) routing protocol  
3 process and wherein the capability is a time-to-live (TTL) parameter.

1 33. (CURRENTLY AMENDED) The apparatus of Claim 32 wherein the new capability  
2 TTL mode of operation is defined by BGP TTL Security Hack (BTSH).